



# SEQUENCE LISTING

<110> Liu, et al.

<120> Screens and Assays for Agents Useful in Controlling  
Parasitic Nematodes

<130> 2002630-0012

<140> 10/051,644

<141> 2002-01-18

<160> 8

<170> PatentIn Ver. 2.1

<210> 1

<211> 425

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:VAP-1 Amino  
Acid Sequence

<400> 1

Met Ala Val Leu Ala Val Val Leu Leu Leu Ala Cys Leu Glu Arg Ala  
1 5 10 15

Val Ala Gln Thr Phe Gly Cys Ser Asn Thr Lys Ile Asn Asp Gln Ala  
20 25 30

Arg Lys Met Phe Tyr Asp Ala His Asn Asp Ala Arg Arg Ser Met Ala  
35 40 45

Lys Gly Leu Glu Pro Asn Lys Cys Gly Leu Leu Ser Gly Gly Lys Asn  
50 55 60

Val Tyr Glu Leu Asn Trp Asp Cys Glu Met Glu Ala Lys Ala Gln Glu  
65 70 75 80

Trp Ala Asp Gly Cys Pro Ser Ser Phe Gln Thr Phe Asp Pro Thr Trp  
85 90 95

Gly Gln Asn Tyr Ala Thr Tyr Met Gly Ser Ile Ala Asp Pro Leu Pro  
100 105 110

Tyr Ala Ser Met Ala Val Asn Gly Trp Trp Ser Glu Ile Arg Thr Val

115		120		125
Gly Leu Thr Asp Pro Asp Asn Lys Tyr Thr Asn Ser Ala Met Phe Arg				
130		135		140
Phe Ala Asn Met Ala Asn Gly Lys Ala Ser Ala Phe Gly Cys Ala Tyr				
145		150		155
				160
Ala Leu Cys Ala Gly Lys Leu Ser Ile Asn Cys Ile Tyr Asn Lys Ile				
		165		170
				175
Gly Tyr Met Thr Asn Ala Ile Ile Tyr Glu Lys Gly Asp Ala Cys Thr				
		180		185
				190
Ser Asp Ala Glu Cys Thr Thr Tyr Ser Asp Ser Gln Cys Lys Asn Gly				
		195		200
				205
Leu Cys Tyr Lys Ala Pro Gln Ala Pro Val Val Glu Thr Phe Thr Met				
		210		215
				220
Cys Pro Ser Val Thr Asp Gln Ser Asp Gln Ala Arg Gln Asn Phe Leu				
225		230		235
				240
Asp Thr His Asn Lys Leu Arg Thr Ser Leu Ala Lys Gly Leu Glu Ala				
		245		250
				255
Asp Gly Ile Ala Ala Gly Ala Phe Ala Pro Met Ala Lys Gln Met Pro				
		260		265
				270
Lys Leu Val Lys Tyr Ser Cys Thr Val Glu Ala Asn Ala Arg Thr Trp				
		275		280
				285
Ala Lys Gly Cys Leu Tyr Gln His Ser Thr Ser Ala Gln Arg Pro Gly				
		290		295
				300
Leu Gly Glu Asn Leu Tyr Met Ile Ser Ile Asn Asn Met Pro Lys Ile				
305		310		315
				320
Gln Thr Ala Glu Asp Ser Ser Lys Ala Trp Trp Ser Glu Leu Lys Asp				
		325		330
				335
Phe Gly Val Gly Ser Asp Asn Ile Leu Thr Gln Ala Val Phe Asp Arg				
		340		345
				350
Gly Val Gly His Tyr Thr Gln Met Ala Trp Glu Gly Thr Thr Glu Ile				
		355		360
				365
Gly Cys Phe Val Glu Asn Cys Pro Thr Phe Thr Tyr Ser Val Cys Gln				

370

375

380

Tyr Gly Pro Ala Gly Asn Tyr Met Asn Gln Leu Ile Tyr Thr Lys Gly  
 385 390 395 400

Ser Pro Cys Thr Ala Asp Ala Asp Cys Pro Gly Thr Gln Thr Cys Ser  
 405 410 415

Val Ala Glu Ala Leu Cys Val Ile Pro  
 420 425

&lt;210&gt; 2

&lt;211&gt; 1341

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence:VAP-1 cDNA  
 Nucleotide Sequence

&lt;400&gt; 2

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ttcggctgct ctaacaccaa gatcaatgac caggctcgta agatgttcta tgatgtcac 120
aatgatgcaa gacgaagcat ggctaaaggg cttgagccaa acaagtgcgg actcttatct 180
gggtgaaaaga atgtttatga attgaattgg gattgagaga tggaaagcaa agctcaggaa 240
tgggcagacg gatgtcccag ctctttccag acatttgatc caacatgggg gcagaactac 300
gcgagctaca tgggatcgat tgctgatccg cttccatacg cttccatggc tgttaatggg 360
tggtggtcgg aaattagaac cgtaggactt acggatcctg ataacaagta cactaacagt 420
gcaatgttcc gatttgctaa tatggcaa atggtaaagctt cagcttttgg atgtgcatac 480
gcgttggtgc caggaaaact atccatcaat tgcatttaca acaagatagg atacatgacc 540
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actttcaciaa tgtgcccttc ggtcacggac cagtcggatc aggcgcgtca aaacttcttg 720
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gttgaagcaa acgccagaac atgggcaaaa ggatgccttt accagcattc aacaagcgca 900
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tcaccatgca cagctgacgc cgattgcca ggaaccaga catgcagtgt cgctgaagca 1260
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&lt;210&gt; 3

<211> 473

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:VAP-2 Amino  
Acid Sequence

<400> 3

Met	Asn	Val	Val	Leu	Ser	Ala	Val	Thr	Leu	Phe	Leu	Ile	Phe	Arg	Tyr
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Ala	Gln	Thr	Val	Asn	Ile	Glu	Gly	Ser	Gly	Gly	Asn	Asp	Glu	Leu	Leu
			20					25					30		

Glu	Gln	Asn	Val	Trp	Asn	Asp	Val	Asp	Asp	Lys	Val	Val	Glu	Ala	Leu
		35					40					45			

Gly	Gly	Leu	Asp	Asp	Glu	Leu	Leu	Thr	Glu	His	Val	Cys	Asn	Lys	Ser
	50					55					60				

Thr	Ile	Thr	Gln	Leu	Gln	Gln	Glu	Ile	Ile	Leu	Thr	Thr	His	Asn	Glu
65					70					75					80

Leu	Arg	Arg	Ser	Leu	Ala	Phe	Gly	Lys	Gln	Arg	Asn	Lys	Arg	Gly	Leu
				85					90					95	

Met	Asn	Gly	Ala	Arg	Asn	Met	Tyr	Lys	Leu	Asp	Trp	Asp	Cys	Glu	Leu
			100					105					110		

Ala	Ser	Leu	Ala	Ala	Asn	Trp	Ser	Thr	Ser	Cys	Pro	Gln	His	Phe	Met
		115					120					125			

Pro	Gln	Ser	Val	Leu	Gly	Ser	Asn	Ala	Gln	Leu	Phe	Lys	Arg	Phe	Tyr
	130					135					140				

Phe	Tyr	Phe	Asp	Gly	His	Asp	Ser	Thr	Val	His	Met	Arg	Asn	Ala	Met
145					150					155					160

Lys	Tyr	Trp	Trp	Gln	Gln	Gly	Glu	Glu	Lys	Gly	Asn	Glu	Asp	Gln	Lys
				165					170					175	

Asn	Arg	Phe	Tyr	Ala	Arg	Arg	Asn	Tyr	Phe	Gly	Trp	Ala	Asn	Met	Ala
			180					185					190		

Lys	Gly	Lys	Thr	Tyr	Arg	Val	Gly	Cys	Ser	Tyr	Ile	Met	Cys	Gly	Asp
		195					200					205			

Gly	Glu	Ser	Ala	Leu	Phe	Thr	Cys	Leu	Tyr	Asn	Glu	Lys	Ala	Gln	Cys	210	215	220	
Glu	Lys	Glu	Met	Ile	Tyr	Glu	Asn	Gly	Lys	Pro	Cys	Cys	Glu	Asp	Lys	225	230	235	240
Asp	Cys	Phe	Thr	Tyr	Pro	Gly	Ser	Lys	Cys	Leu	Val	Pro	Glu	Gly	Leu	245	250	255	
Cys	Gln	Ala	Pro	Ser	Met	Val	Lys	Asp	Asp	Gly	Gly	Ser	Phe	Gln	Cys	260	265	270	
Asp	Asn	Ser	Leu	Val	Ser	Asp	Val	Thr	Arg	Asn	Phe	Thr	Leu	Glu	Gln	275	280	285	
His	Asn	Phe	Tyr	Arg	Ser	Arg	Leu	Ala	Lys	Gly	Phe	Glu	Trp	Asn	Gly	290	295	300	
Glu	Thr	Asn	Thr	Ser	Gln	Pro	Lys	Ala	Ser	Gln	Met	Ile	Lys	Met	Glu	305	310	315	320
Tyr	Asp	Cys	Met	Leu	Glu	Arg	Phe	Ala	Gln	Asn	Trp	Ala	Asn	Asn	Cys	325	330	335	
Val	Phe	Ala	His	Ser	Ala	His	Tyr	Glu	Arg	Pro	Asn	Gln	Gly	Gln	Asn	340	345	350	
Leu	Tyr	Met	Ser	Ser	Phe	Ser	Asn	Pro	Asp	Pro	Arg	Ser	Leu	Ile	His	355	360	365	
Thr	Ala	Val	Glu	Lys	Trp	Trp	Gln	Glu	Leu	Glu	Glu	Phe	Gly	Thr	Pro	370	375	380	
Ile	Asp	Asn	Val	Leu	Thr	Pro	Glu	Leu	Trp	Asp	Leu	Lys	Gly	Lys	Ala	385	390	395	400
Ile	Gly	His	Tyr	Thr	Gln	Met	Ala	Trp	Asp	Arg	Thr	Tyr	Arg	Leu	Gly	405	410	415	
Cys	Gly	Ile	Ala	Asn	Cys	Pro	Lys	Met	Ser	Tyr	Val	Val	Cys	His	Tyr	420	425	430	
Gly	Pro	Ala	Gly	Asn	Arg	Lys	Asn	Asn	Lys	Ile	Tyr	Glu	Ile	Gly	Asp	435	440	445	
Pro	Cys	Glu	Val	Asp	Asp	Asp	Cys	Pro	Ile	Gly	Thr	Asp	Cys	Glu	Lys	450	455	460	

Thr Thr Ser Leu Cys Val Ile Ser Lys  
465 470

<210> 4

<211> 1422

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:VAP-2 cDNA  
Nucleotide Sequence

<400> 4

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gacgacaagg ttgtagaagc acttggtggt cttgatgatg aactgctaac cgaacatgtg 180
tgtaacaaat caacgatcac tcagctacag caggagatca tcttgacaac ccacaatgaa 240
ttacgaagat cattggcttt cggaaagcaa agaaacaaga gaggtctcat gaacggtgcg 300
agaaatatgt ataaactgga ttgggattgt gaactggcat cacttgacgc caattggtca 360
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aagcgtttct atttttattt tgatgggcac gactctactg tacatatgcg aaacgcgatg 480
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tgctcgata ttatgtgcgg cgacggtgaa tctgcacttt tcacttgtct ttataacgaa 660
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gactgtttca catatccagg atcaaaatgt ttagtacctg aaggattatg tcaagcacct 780
tctatggtaa aggatgatgg aggaagtttc caatgtgata actcccttgt gtcagatgtc 840
acccgcaatt tcactttgga gcaacacaat ttttatagat ctcgtcttgc aaaagggttt 900
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aactgtccga agatgtcgta cgtggtttgt cactatgggc cagcaggcaa cagaaagaac 1320
aataaaatct atgaaatcgg ggatccttgc gaagtcgatg atgattgccc gattggaaca 1380
gattgtgaaa agacaacttc tttatgtgtg atctcaaaat aa 1422
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<210> 5

<211> 218

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Clustal W  
Alignment of VAP-1, VAP-2, and Selected Other

# Nematode VA Proteins.

<400> 5

Met Phe Ser Pro Val Ile Val Ser Val Ile Phe Thr Ile Ala Phe Cys  
1 5 10 15

Asp Ala Ser Pro Ala Arg Asp Gly Phe Gly Cys Ser Asn Ser Gly Ile  
20 25 30

Thr Asp Lys Asp Arg Gln Ala Phe Leu Asp Phe His Asn Asn Ala Arg  
35 40 45

Arg Arg Val Ala Lys Gly Val Glu Asp Ser Asn Ser Gly Lys Leu Asn  
50 55 60

Pro Ala Lys Asn Met Tyr Lys Leu Ser Trp Asp Cys Ala Met Glu Gln  
65 70 75 80

Gln Leu Gln Asp Ala Ile Gln Ser Cys Pro Ser Ala Phe Ala Gly Ile  
85 90 95

Gln Gly Val Ala Gln Asn Val Met Ser Trp Ser Ser Ser Gly Gly Phe  
100 105 110

Pro Asp Pro Ser Val Lys Ile Glu Gln Thr Leu Ser Gly Trp Trp Ser  
115 120 125

Gly Ala Lys Lys Asn Gly Val Gly Pro Asp Asn Lys Tyr Asn Gly Gly  
130 135 140

Gly Leu Phe Ala Phe Ser Asn Met Val Tyr Ser Glu Thr Thr Lys Leu  
145 150 155 160

Gly Cys Ala Tyr Lys Val Cys Gly Thr Lys Leu Ala Val Ser Cys Ile  
165 170 175

Tyr Asn Gly Val Gly Tyr Ile Thr Asn Gln Pro Met Trp Glu Thr Gly  
180 185 190

Gln Ala Cys Lys Thr Gly Ala Asp Cys Ser Thr Tyr Lys Asn Ser Gly  
195 200 205

Cys Glu Asp Gly Leu Cys Thr Lys Gly Pro  
210 215

<210> 6

<211> 205

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Clustal W  
Alignment of VAP-1, VAP-2, and selected other  
nematode VA Proteins.

<400> 6

Asp Val Pro Glu Thr Asn Gln Gln Cys Pro Ser Asn Thr Gly Met Thr  
1 5 10 15

Asp Ser Val Arg Asp Thr Phe Leu Val His Asn Glu Phe Arg Ser Ser  
20 25 30

Val Ala Arg Gly Leu Glu Pro Asp Ala Leu Gly Gly Asn Ala Pro Lys  
35 40 45

Ala Ala Lys Met Leu Lys Met Val Tyr Asp Cys Glu Val Glu Ala Ser  
50 55 60

Ala Ile Arg His Gly Asn Lys Cys Val Tyr Gln His Ser His Gly Glu  
65 70 75 80

Asp Arg Pro Gly Leu Gly Glu Asn Ile Tyr Lys Thr Ser Val Leu Lys  
85 90 95

Phe Asp Lys Asn Lys Ala Ala Lys Gln Ala Ser Gln Leu Trp Trp Asn  
100 105 110

Glu Leu Lys Glu Phe Gly Val Gly Pro Ser Asn Val Leu Thr Thr Ala  
115 120 125

Leu Trp Asn Arg Pro Gly Met Gln Ile Gly His Tyr Thr Gln Met Ala  
130 135 140

Trp Asp Thr Thr Tyr Lys Leu Gly Cys Ala Val Val Phe Cys Asn Asp  
145 150 155 160

Phe Thr Phe Gly Val Cys Gln Tyr Gly Pro Gly Gly Asn Tyr Met Gly  
165 170 175

His Val Ile Tyr Thr Met Gly Gln Pro Cys Ser Gln Cys Ser Pro Gly  
180 185 190

Ala Thr Cys Ser Val Thr Glu Gly Leu Cys Ser Ala Pro  
195 200 205



<210> 7  
 <211> 207  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:Clustal W  
 Alignment of VAP-1, VAP-2, and selected other  
 nematode VA proteins.

<400> 7  
 Met Asn Tyr Leu Leu Leu Val Val Ala Leu Ala Val Gly Cys Ser Ala  
 1 5 10 15  
 Asp Phe Gly Ser Ser Gly Gln Asn Gly Ile Ile Asn Ala His Asn Thr  
 20 25 30  
 Leu Arg Ser Lys Ile Ala Lys Gly Thr Tyr Val Ala Lys Gly Thr Gln  
 35 40 45  
 Lys Ser Pro Gly Thr Asn Leu Leu Lys Met Lys Trp Asp Ser Ala Val  
 50 55 60  
 Ala Ala Ser Ala Gln Asn Tyr Ala Asn Gly Cys Pro Thr Gly His Ser  
 65 70 75 80  
 Gly Asp Ala Gly Leu Gly Glu Asn Leu Tyr Trp Tyr Trp Thr Ser Gly  
 85 90 95  
 Ser Leu Gly Asp Leu Asn Gln Tyr Gly Ser Ala Ala Ser Ala Ser Trp  
 100 105 110  
 Glu Lys Glu Phe Gln Asp Tyr Gly Trp Lys Ser Asn Leu Met Thr Ile  
 115 120 125  
 Asp Leu Phe Asn Thr Gly Ile Gly His Ala Thr Gln Met Ala Trp Ala  
 130 135 140  
 Lys Ser Asn Leu Ile Gly Cys Gly Val Lys Asp Cys Gly Arg Asp Ser  
 145 150 155 160  
 Asn Gly Leu Asn Lys Val Thr Val Val Cys Gln Tyr Lys Pro Gln Gly  
 165 170 175  
 Asn Phe Ile Asn Gln Tyr Ile Tyr Val Ser Gly Ala Thr Cys Ser Gly  
 180 185 190

Cys Pro Ser Gly Thr Ser Cys Glu Thr Ser Thr Gly Leu Cys Val  
 195 200 205

<210> 8

<211> 231

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Clustal W  
 Alignment of VAP-1, VAP-2, and selected other  
 nematode VA proteins.

<400> 8

Met Ser Asn Lys Leu Ile Ile Ser Ile Leu Ile Leu Thr Ile Ile Tyr  
 1 5 10 15

Thr Val Val Asn Ser Leu Thr Val Pro Glu Gln Asn Ala Val Val Asp  
 20 25 30

Cys Ile Asn Lys Tyr Arg Ser Gln Leu Ala Asn Gly Lys Thr Lys Asn  
 35 40 45

Lys Asn Gly Gly Asn Phe Pro Ser Gly Lys Asp Ile Leu Glu Val Ser  
 50 55 60

Tyr Ser Lys Asp Leu Glu Lys Ser Ala Gln Arg Trp Ala Asn Lys Cys  
 65 70 75 80

Ile Phe Asp His Asn Gly Thr Asp Leu Tyr Ser Gly Gly Lys Phe Tyr  
 85 90 95

Gly Glu Asn Leu Tyr Leu Asp Gly Asp Phe Glu His Lys Asn Ile Thr  
 100 105 110

Gln Leu Met Ile Asp Ala Cys Asn Ala Trp Trp Gly Glu Ser Thr Thr  
 115 120 125

Asp Gly Val Pro Pro Ser Trp Ile Asn Asn Phe Leu Pro Thr Asp Asn  
 130 135 140

Lys Glu Asn Asp Glu Lys Phe Glu Ala Val Gly His Trp Thr Gln Met  
 145 150 155 160

Ala Trp Ala Lys Thr Tyr Gln Ile Gly Cys Ala Leu Lys Val Cys His  
 165 170 175

Lys Pro Asp Cys Asn Gly Asn Leu Ile Asp Cys Arg Tyr Tyr Pro Gly  
180 185 190

Gly Asn Gly Met Gly Ser Pro Ile Tyr Gln Gln Gly Lys Pro Ala Ser  
195 200 205

Gly Cys Gly Lys Ala Gly Pro Ser Thr Lys Tyr Ser Gly Leu Cys Lys  
210 215 220

Pro Asp Pro His Gln Asn Asn  
225 230